Designing Massive Open Online Courses (MOOCs) in Library and Information Science

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ABSTRACT
In present scenario, Massive Open Online Course (MOOCs) has become a popular issue in every field and MOOCs are developing in every disciplines at large level. Thus, this study aims to define MOOCs concept and further discusses how 7Cs learning framework model will be useful to design Massive Open Online Courses (MOOCs) effectively. This study may be helpful in designing MOOCs effectively in every field including library and information science domain.

Key Terms: MOOC, Massive Open Online Course, design, 7Cs learning framework, model, Library and Information Science

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INTRODUCTION
With the emergence of information communication and internet technologies, learning patterns of the users are changing dramatically and these are shifting from traditional learning to online learning. Therefore, education institutes and professionals of diverse disciplines are moving from traditional courses to online courses and attaching new technologies, platforms, social media and pedagogies into them in order to meet expectations of the users. Hence, the users are attracting and adopting online learning for accomplishing their targets worldwide. In online learning sphere, Massive Open Online Course (MOOC) has come up as a new avatar and become much burning topic in all disciplines in a very short period of time, resultant, professionals of diverse disciplines including library and information science professionals are not only understanding and adopting the MOOC phenomena but also engaging in development of Massive open online Courses (MOOCs) on their interested topics connected to their respective disciplines. Owing to different characteristics of the MOOC from other online courses, it is always a big challenge before library and information science professionals to design and develop an effective Massive Open Online Courses in connection to well understanding the structure, pedagogies and other issues required to design an effective MOOC for their learners. Through this participation, they may be able to decide what type of analysis, contents, design, resources, assessment tools and so on are required for developing an effective Massive Open Online Course (MOOC) for their target learners.

Massive Open Online Course (MOOC)
Origin of Massive Open Online Courses (MOOCs) was tracked in the year 2008 when Stephen Downes and George Siemens presented "Connectivism and Connective Knowledge/2008 (CCK8)" a for-credit course that was offered at the University of Manitoba, Canada. This course reached the boundaries of connectivism. Siemens and Downes used a wide range of platforms such as blogs, forums, wikis, face book etc. and received the registration of over 2200 participants and allowed the users to participate at large level. Dave Cormier, University of Prince Edward Island and Bryan Alexander, National Institute of Technology in Liberal Education coined the term "Massive Open Online Course (MOOC)". Pappano stated that Year 2012 was considered as a miracle year for Massive open Online Courses (MOOCs) and same year was declared as the year of MOOC by "New York Times" and few MOOCs key players namely Coursera, Udacity, Edx etc. were also developed and using for developing MOOCs in different subjects worldwide.

MOOC consists of four words viz. Massive, Open, Online and
Course in which "Massive" denotes participation of users at large scale, "Open" shows regarding openness of courses for all users without any restrictions, "Online" expresses that these MOOCs are available on online mode only via Internet, and last word "Course" presents the structures of MOOCs offered to the participants in online mode.

**Fig.1: Component of the Massive Open Online Course (MOOC)**

A Massive Open Online Course (MOOC) consists of a variety of online reading materials and resources. MOOC is very different online learning model from traditional or online classes wherein limited number of students, face-to-face interactions with age attached in particular geographical location in a university /college/institute are essential components. MOOCs present courses to unlimited users who reside in various geographical locations and require no addresses, no age limit and almost no cost as well. But, for every user who wants to participate in any MOOC, he or she must have a personal computer/ laptop with internet connection.

Wikipedia defines the Massive Open Online Course (MOOC) as an online course which aims to unlimited participation and open access through the web and contains traditional course materials such as filmed lectures, readings, problem sets, interactive user forums to support community interactions among students, professors, and teaching assistants (TAs).

Gore said that MOOCs can be defined as:

- **Massive**: as registration is not limited and may be with enrolment in some cases exceeding 100,000 students;
- **Open**: to take advantage of widely available OER and open registration (though some MOOCs have pre-requisites, and for-fee registrations, examinations or certificates of completion);
- **Online** because no requirement of face-to-face attendance; and
- **Course**: defines the concept of a pedagogically designed online learning.

Therefore, a Massive Open Online Course (MOOC) may be a course in online learning sphere without the prerequisites of the traditional education system in which any user who contains computer/laptop with internet connection can participate virtually in any MOOC.

**LITERATURE REVIEW**

Different studies were found on the Massive Open Online Course (MOOC) design, quality, model and other issues in which Mulder & Jannsen proposed a model for open education based on the five dimensions such as open educational resources, open learning services, open teaching efforts, open to learner needs and open to employability and capabilities. Veletasinos et al. stressed that for understanding Massive Open Online Course (MOOC) fully, it is very necessary that one has to looks at more than just log files and online interactions. Selwyn & Buffin conducted the meta-analysis on the MOOC- literature and identified that MOOCs may vary in size and scale, MOOCs are free or not, how MOOCs may be fit to traditional educational offerings, the MOOCs are transformative or not, the ways of challenging traditional educational business models, types of pedagogical approaches used, the nature of the content and degree of interactivity and communication, the relationship between the participants and the tutors, the forms of recognition of learning and assessment, and identification of technologies which are to be used. Kaushik & Kumar pointed out various opportunities and challenges before libraries and discussed how libraries can help to the MOOC developers and gear up the MOOC movement in diverse ways. Console’s study mainly focused on effective designing issues of the Massive Open Online Courses (MOOCs) by using twelve-dimensional classification schema and 7Cs learning design framework. Gayoung et al. developed a model of MOOC design which based on following Richey and Klein (2007)’s conceptual model development procedure and critical review of relevant literature and observe typical MOOC development processes in six procedural phases and nine specific steps. Lackner et al. in their study proposed a checklist for designing Massive Open Online Courses (MOOCs) in six categories namely core requirements, structure, participant requirements, assignments, media design, communication and resources. Kaushik & Kumar mapped the periodical literature published on Massive Open Online Courses (MOOCs) and library and information science domain in journals and magazines of the library and information science area and discovered that large number of articles published by "Public Service Quarterly" on MOOCs and library theme, majority of articles published by foreign journals/magazines by single authors and 2013 year was noted as most productive year. Clàr and Barberà discussed that connectivism is not a valid learning theory, thus, there is an urgent need to develop an effective pedagogy for MOOCs which is to be based on a valid learning theory. Glance et al. discovered that the use of short videos and quizzes, openness, the online mode of delivery, online forums, and peer, self-assessment, making the student experience more collaborative, interactive, autonomous, diverse, open and connected/interactive were the main characteristics of MOOCs.

Saadatdoost et al. conducted brief literature review on recent research issues of the Massive Open Online Course by using thirty two articles, four search engines and key terms related to MOOCs and also provided a holistic definition of Massive Open Online Courses. Drake et al. argued that both pedagogical issues and information system theory need to integrate for making effective design of the Massive Open Online Courses and suggested five principles such as meaningful, engaging, measurable, accessible and scalable which may be used for development of MOOCs. Alario-Hoyos et al. proposed a conceptual framework to describe and design MOOC call MOOC canvas for educators. This canvas consists of eleven interrelated issues that are addressing a set of questions, offering a visual and understandable guidance for educators which may be useful in the MOOC design process. Margaryan et al. presented
ten dimensional instructional design criteria to assess the quality of Massive open Online Courses (MOOCs). Kaushik through a survey study revealed that MOOCs were very helpful towards learning important topics, 'copyright and licensing issues of reading materials' were identified as the main barrier. This study also disclosed that majority of LIS professionals preferred to use sole-based learning and go for MOOCs which available free of cost and provide a certificate after accomplishing a course.

The 7Cs of Learning Design Framework

The first 'C' denoting "Conceptualise" was considered as a starting point for MOOC design and helpful in developing a vision for the designing the Massive Open Online Course (MOOC). It assists the designer to identify the nature and type of the learners who would likely to be registered in the Massive Open Online Course (MOOC) with their age bars, diversities, characteristics, skills, perceptions, aspirations etc. with the reasons behind their participation in the MOOC. This C is also helpful in establishing the learner's level of experience, technologies skills and their educational background. This can be achieved through the creation of "personas". Personas is tool that describes the types of learners who likely to be registered in a MOOC and expectations of participation MOOC environment. In addition, features of this course also assist the designers to know the MOOC in terms of their, core principles of MOOCs, guidance and support, pedagogical approaches, types of content and activities, different forms of communication and collaboration and reflections of the participants towards achievement from learning.

The next four Cs are concerned with designing the variant resources and activities for the learners.

The second 'C' is "Create" which assists the MOOC designer to decide regarding course design style, selection of course name and course description what types of learning materials need to be created for a MOOC, that may be text-based, interactive materials, podcasts or videos, Open Education Resources (OER) and other types also. Besides this, MOOC developer undergoes some activities such as creating own content for a MOOC depending upon the nature of the Massive Open Online Course (MOOC) including use or reuse of Open Education Resources (OER) in creation of content for MOOC. The third 'C' stand for "Communicate" defines methods that facilitate to make proper communication between the learner and the tutor, the MOOC learner and their peers, and the broader community of Massive Open Online Course by using social media but use of social media for communication in Massive Open Online Course (MOOC) is depending on types of MOOCs. In MOOCs case, significant emphasis is being given on Communication social media and the participants encourage enough to communicate with their peers, especially through social media that includes the use of a hashtag, Twitter, Facebook page and so on for the MOOC. But, in xMOOCs, main attention is to provide the individual approach therefore the communication between the MOOC learners and the tutor or peers might be restricted to email only. Forth 'C' defines "Collaborate" of which the main focusing is to establish the mechanisms for collaboration or group work.
Again the collaboration also depends upon MOOCs case by case and likely to be more prevalent in cMOOCs than xMOOCs. This may include the use of the jigsaw pedagogical pattern. In this situation, the participants are divided into groups of four. Each participant has assigned a topic of research and all participants then get connected with others who have been researching the same topic and pool their collective knowledge. And finally, all participants return to their home and share their combined understanding of knowledge on the four topics assigned to them. Last C of the activities part namely fifth ‘C’ stands for the "Consider" is mainly concerned with different ways in which diverse reflections regarding the achievements of learning outcomes are to be demonstrated by the MOOC learners. Assessment may be diagnostic, formative or summative. The reflections in cMOOCs setting, may be through interaction with other participants or through writing and sharing on blogs on their learning outcomes by the participants. In xMOOCs case, usually formative assessment elements, through, for example, interactive formative quizzes are included. Besides this, participants may also get recognition for their learning outcomes through certificates of participation or attendance or the awarding of digital badges for particular achievements for Massive Open Online Course (MOOC).

The sixth ‘C’ describes "Combine" take steps back to the MOOC designer in terms of getting reflections on the design process including dates and look at the design of the Massive Open Online Course (MOOC) from different perspectives. These include creation of an activity profile showing how much time participants are spending on the following activities:

- Assimilative activities - includes reading, listening and viewing
- Information handling - consists of finding and collecting resource or manipulating data in a spreadsheet
- Communication tools - made by building forums or through social media
- Productive approaches - for creating learning artifacts, for example, a chemical compound or an architectural model
- Adaptive approaches - made through interacting with modeling or simulation tools
- Experimental exercises - through drilling and practicing or enhancing skills in a particular context or undertaking an investigation
- Assessment tools - formative or summative assessment for reconditioning of learning.

In this stage, Course View Map is created that is able to describe the details of a MOOC course including guidance and support nature of the content and activities of the participants, diverse ways through which communication and collaboration are to be established and different mechanisms by which reflections of the participants regarding their achievements are to be reflected from their learning outcomes.

Last and final, the seventh ‘C’ denotes "Consolidate" that is focusing on the implementation of the design of the Massive Open Online Course (MOOC) in real situation and assessing effectiveness of the MOOC by an evaluation rubric. For evaluating and analyzing participants’ interactions for the MOOC, qualitative or quantitative evaluation through a survey or interviews may be applied. Apart from this, for assessing the effectiveness of the MOOC design, classification schemes may be used.

Therefore, the 7Cs learning design framework can be used both to design and evaluate Massive Open Online Courses (MOOCs). The activities, tools and resources associated with each of the Cs enable the MOOC designer to make more informed about the making design decisions of the Massive Open Online Courses (MOOCs). The evaluation rubric under the Consolidate C enables MOOC developers to ensure that the course design is fit for purpose, ensuring the quality of the MOOCs and the ultimate learner experience.

CONCLUSION

This study provides a cursory look of Massive Open Online Course (MOOC) concept and argues how 7Cs learning design framework can be used in MOOC environment for designing the Massive Open Online Courses (MOOCs) in various disciplines including library and information science. It was found from the study that MOOC design patterns, contents, pedagogies, learning materials etc. may vary greatly from MOOC by MOOC and hence learning design frameworks, classification schema, parameters of online courses and so on may be used both in designing as well as evaluating Massive Open Online Courses (MOOCs). This study provides awareness to the library and information science professionals to participate at least two types of MOOCs in order to get well verse with MOOC phenomena, prior to get involved in MOOC activities particularly in designing the MOOCs and also fostering library and information science professionals to look for other frameworks, designing pedagogies, evaluation rubrics and so on which to be fitted for designing Massive Open Online Courses (MOOCs) effectively in diverse disciplines including library and information science domain.

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